

# FIG. 2

21  
EXAMPLE OF DEFINING THE TYPES OF DATA MADE OF A PLURALITY OF SUB-DATA ITEMS

CREATE TYPE ADDRESS\_TYPE (  
PUBLIC ZIP\_CODE CHAR (6),  
PUBLIC ADDRESS CHAR (20),  
PUBLIC TELEPHONE\_NO. CHAR (10),

201  
SUB-DATA DEFINITION

PUBLIC FUNCTION (number Int)  
RETURNS  
FUNCTION PROPER  
RETURN address\_data);

202  
FUNCTION DEFINITION

22  
TYPICAL DATA CREATED FROM TYPE  
CREATE TABLE ADDRESS\_RECORDS  
(Id INT, NAME CHAR(10), ADDRESS\_DATA);

204  
ADDRESS RECORD TABLE TYPICAL SUB-DATA ITEMS

ID	NAME	ADDRESS DATA
1	YAMADA	ZIP CODE : 114 ADDRESS : TOKYO TELEPHONE NO. : 03-3735-XXXX
2	SATO	ZIP CODE : 223 ADDRESS : YOKOHAMA TELEPHONE NO. : 045-564-XXXX
3	TANAKA	ZIP CODE : 830 ADDRESS : HAKATA TELEPHONE NO. : 0942-43-XXXX

203  
TYPICAL DATA  
COMPOSED OF  
SUB-DATA ITEMS

23  
EXAMPLE OF QUERY FOR RETRIEVING DATA MADE OF  
A PLURALITY OF SUB-DATA ITEMS  
SELECT ZIP\_CODE (ADDRESS\_DATA) FROM ADDRESS\_RECORDS

SELECT ADDRESS\_DATA FROM ADDRESS\_RECORDS  
WHERE ADDRESS (ADDRESS\_DATA) = YOKOHAMA

205  
TYPICAL RETRIEVAL  
OF SUB-DATA ITEM

206  
TYPICAL RETRIEVAL OF DATA

FIG. 3

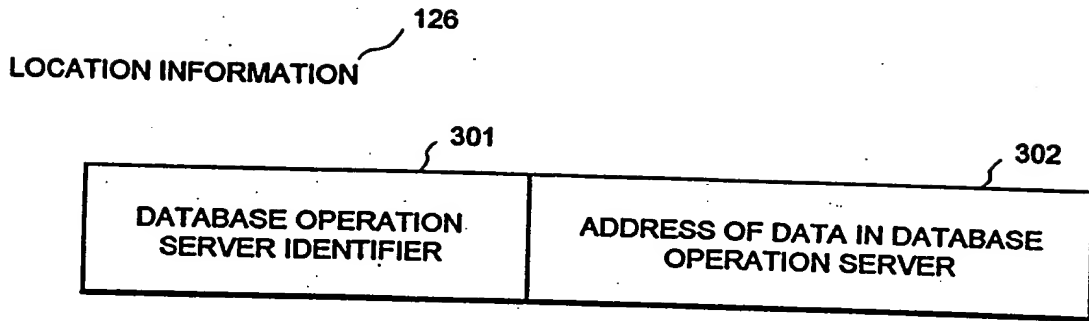
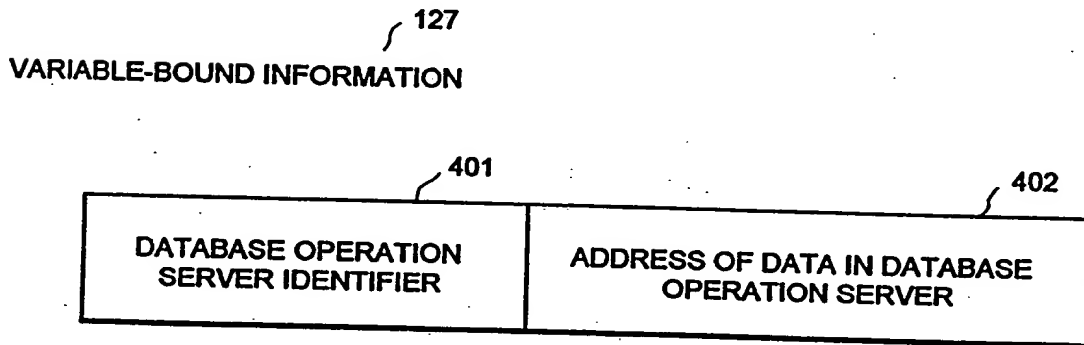


FIG. 4



# FIG. 5

## 51 INTERNAL-FORMAT PROCEDURE FOR SUB-DATA RETRIEVAL

125a	
CODE	INFORMATION
501 SUB-DATA RETRIEVAL CODE	LOCATION INFORMATION
	SUB-DATA OFFSET INFORMATION 502
	SUB-DATA LOCATION-OFFSET LIST 507
	OFFSET OF CODE TO BE EXECUTED NEXT

505a  
LOCATION TO  
ACCOMMODATE  
SUB-DATA 1

505b  
LOCATION TO  
ACCOMMODATE  
SUB-DATA 2

## 52 INTERNAL-FORMAT PROCEDURE FOR SUB-DATA UTILIZATION

125b	
CODE	INFORMATION
---	---
503a CODE FOR USING SUB-DATA 1	INFORMATION NECESSARY FOR PROCESSING
	OFFSET OF LOCATION FOR ACCOMMODATING SUB-DATA 1 504a
	OFFSET OF CODE TO BE EXECUTED NEXT 506a
---	---
503b CODE FOR USING SUB-DATA 2	INFORMATION NECESSARY FOR PROCESSING
	OFFSET OF LOCATION FOR ACCOMMODATING SUB-DATA 2 504b
	OFFSET OF CODE TO BE EXECUTED NEXT 506b
---	---

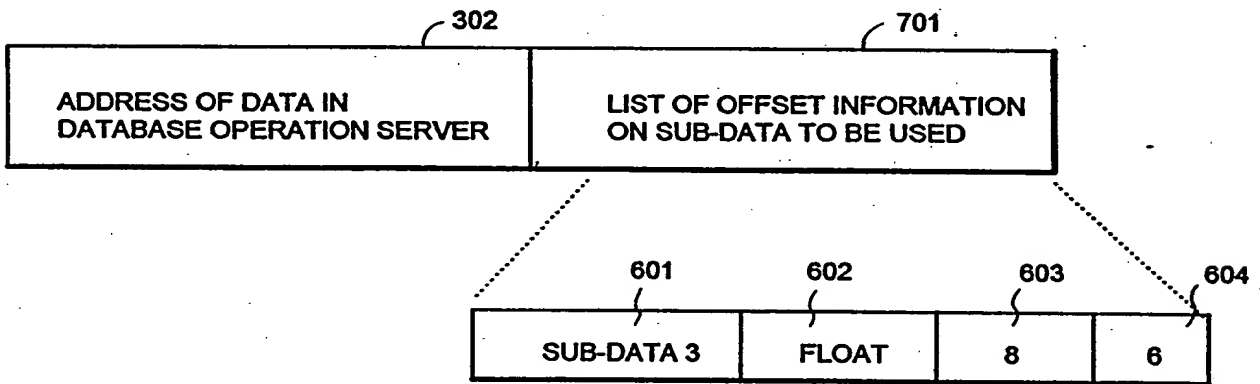
FIG. 6

124  
SUB-DATA OFFSET INFORMATION

601 IDENTIFIER	602 DATA TYPE	603 DATA LENGTH	604 OFFSET
SUB-DATA 1	INT	4	0
SUB-DATA 2	CHAR	2	4
SUB-DATA 3	FLOAT	8	6

FIG. 7

128  
SUB-DATA RETRIEVAL INFORMATION



WHEN SUB-DATA 3 IS DESIRED TO BE RETRIEVED

FIG. 8

129  
SUB-DATA 3

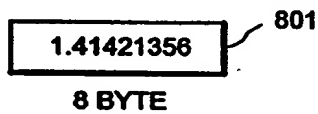




FIG. 10

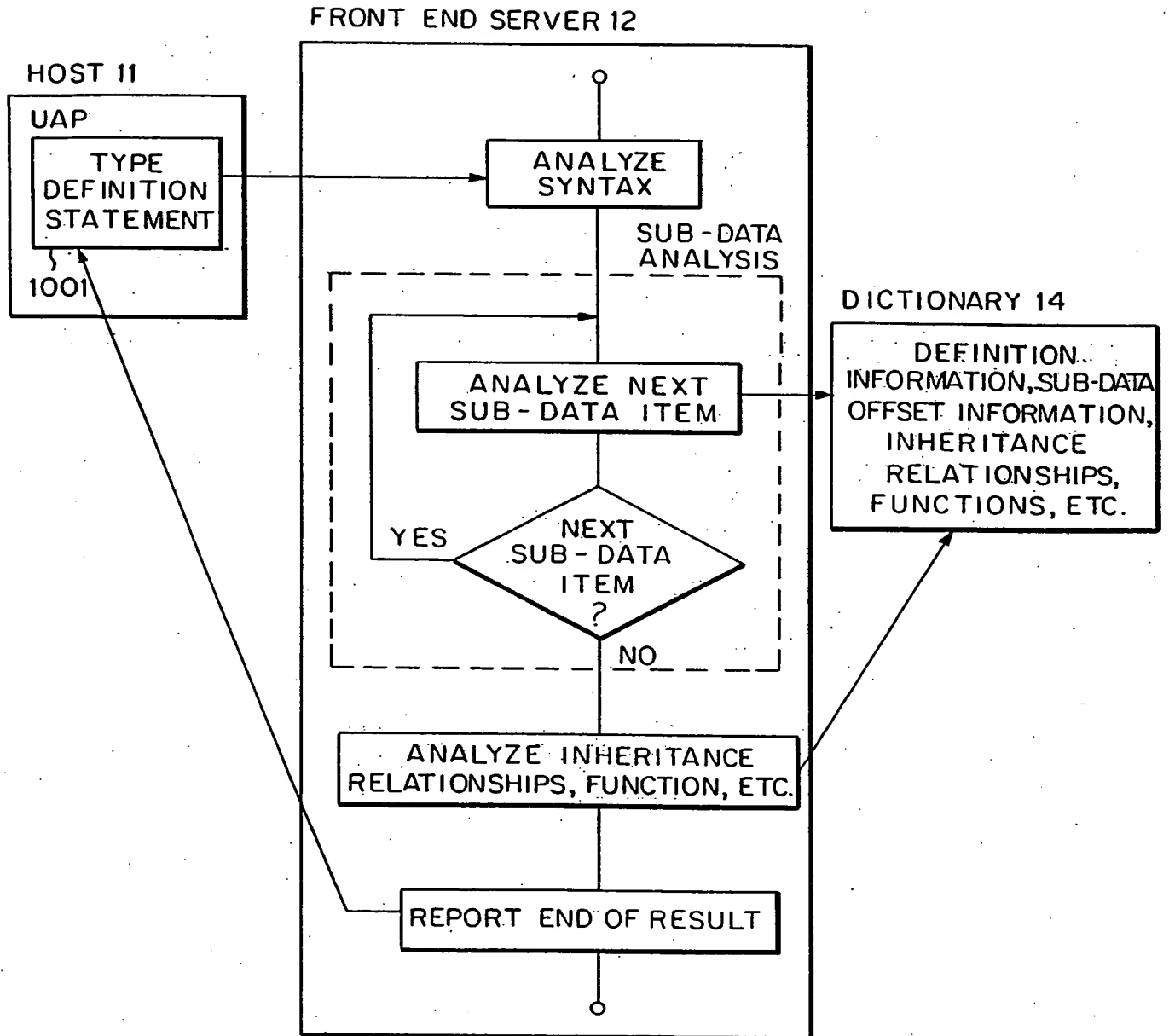


FIG. 11

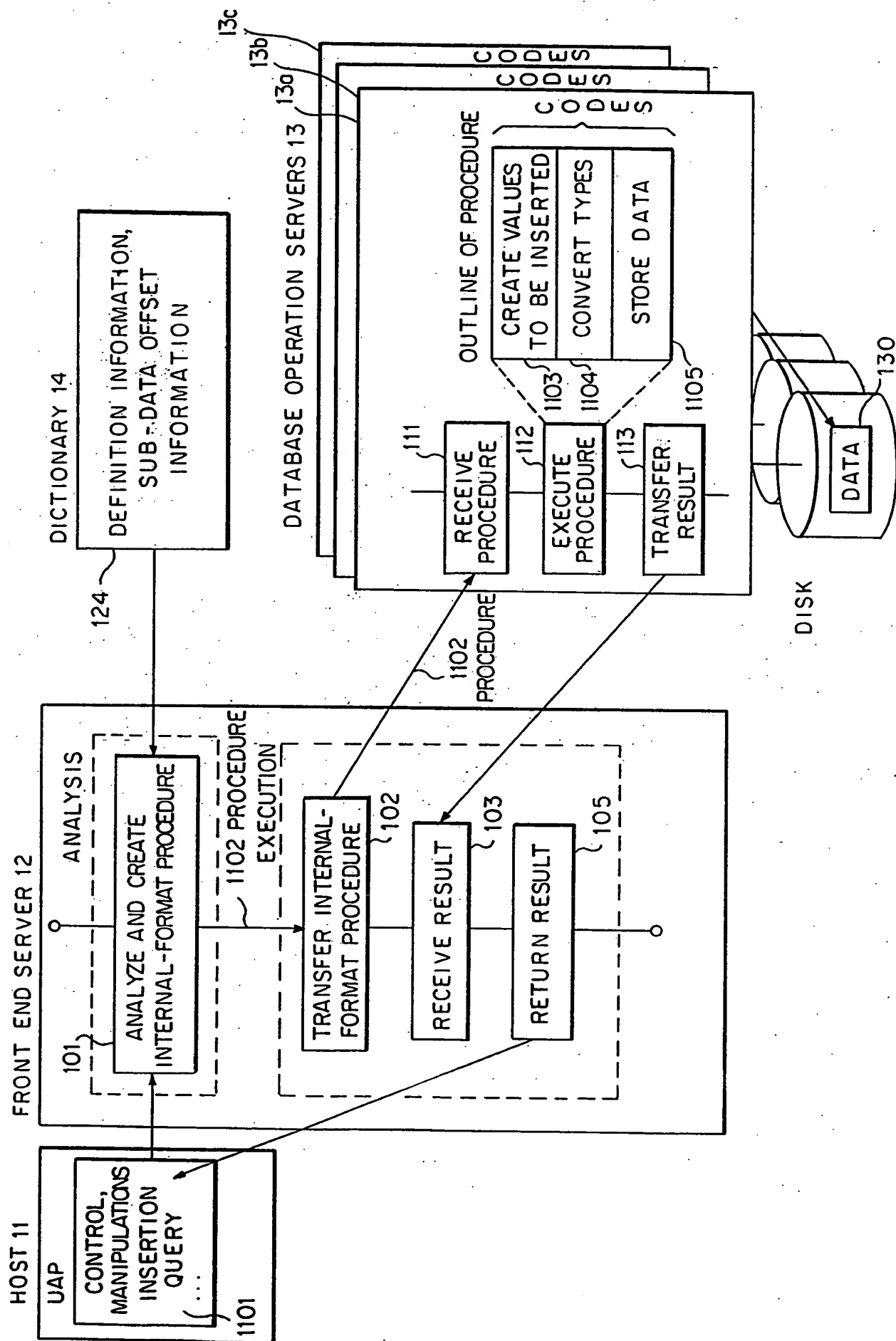
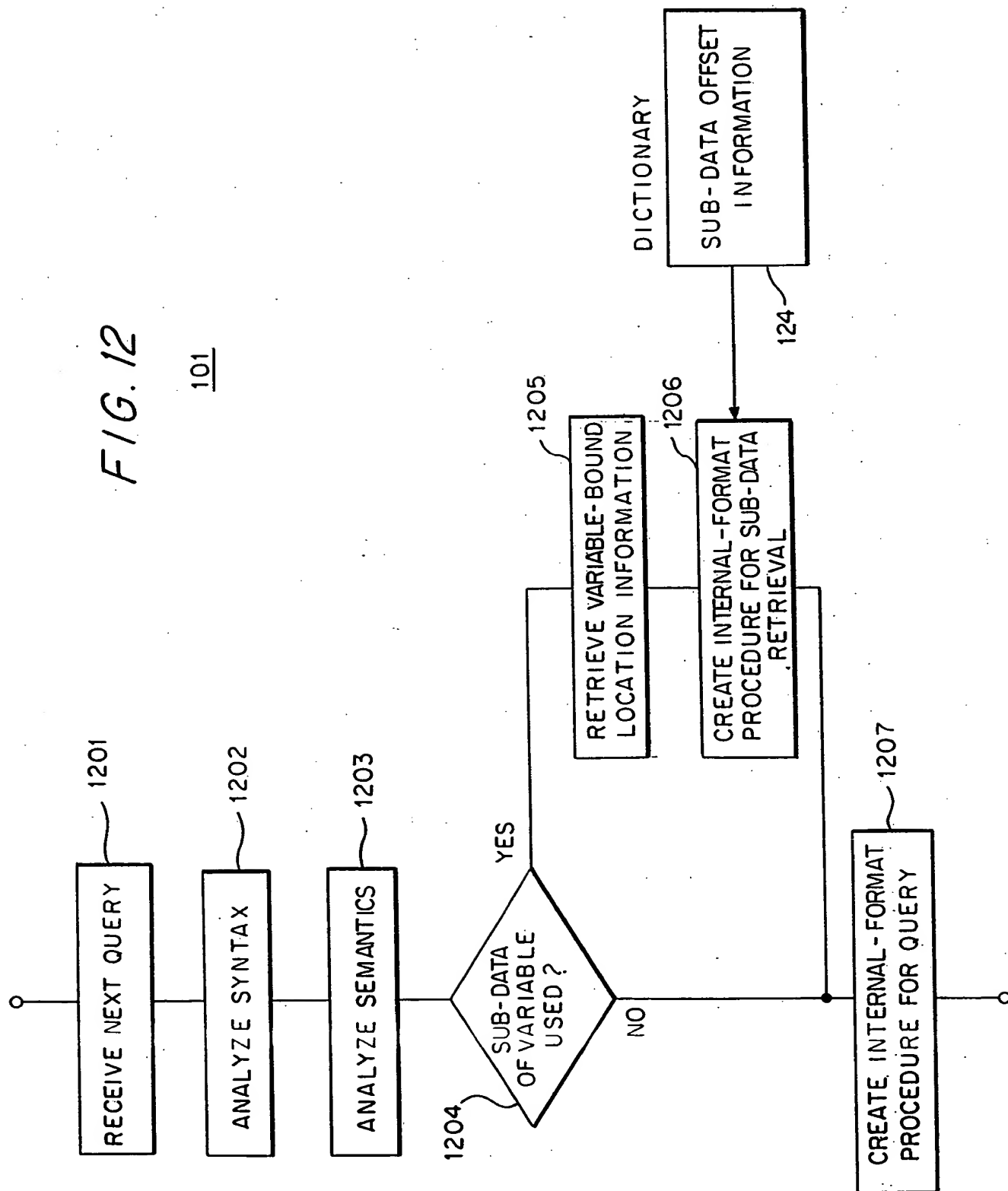




FIG. 12

101



FRONT END SERVER SIDE 102

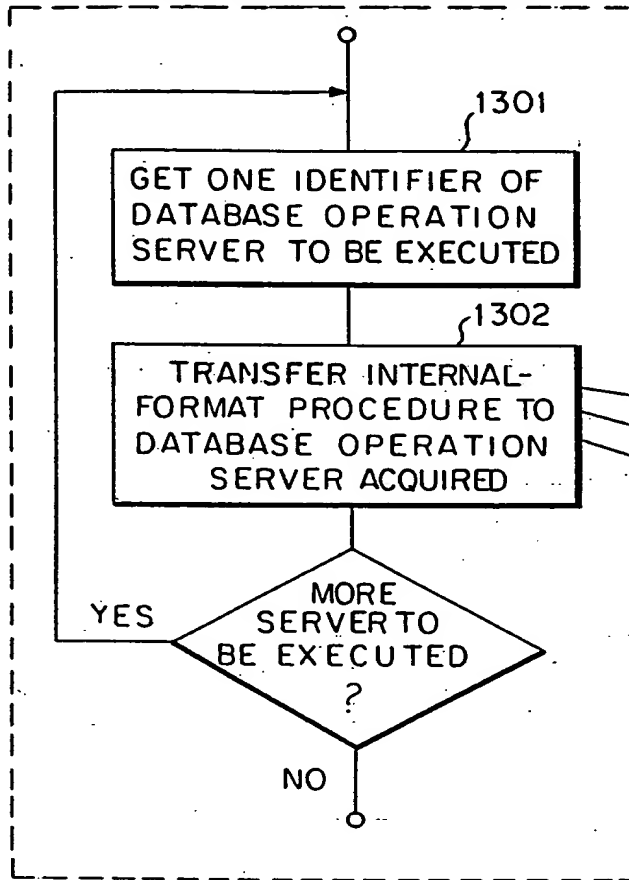


FIG. 13

DATABASE OPERATION SERVER SIDE 111

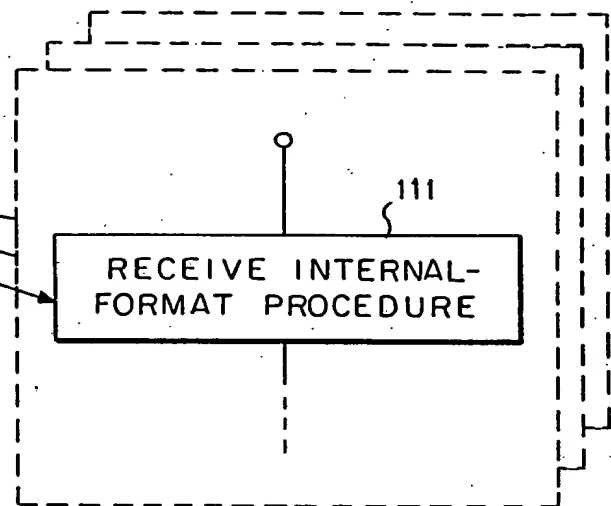


FIG. 14

104

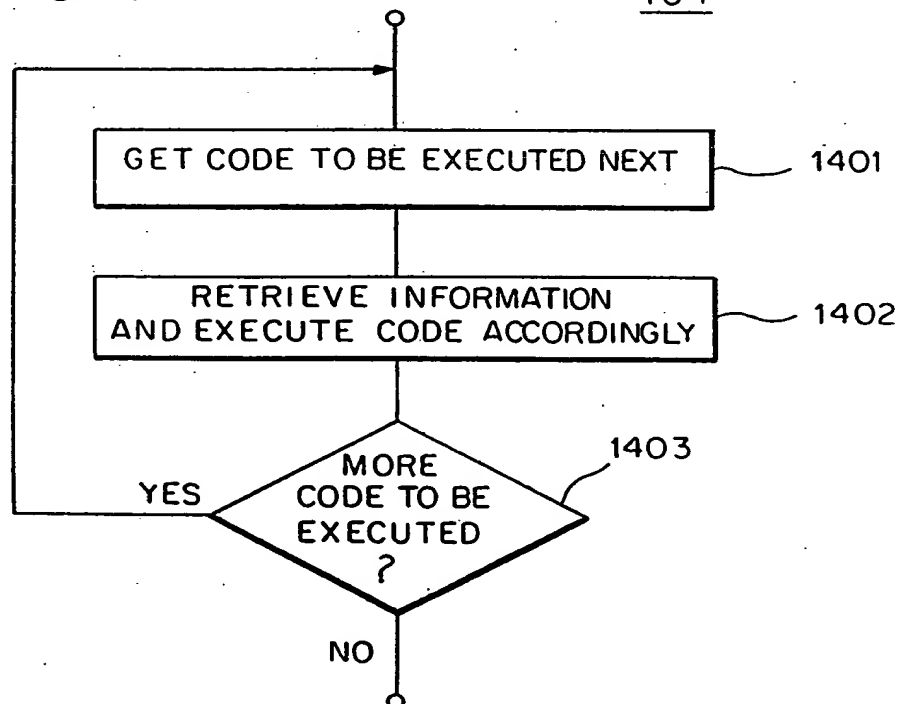


FIG. 15

112

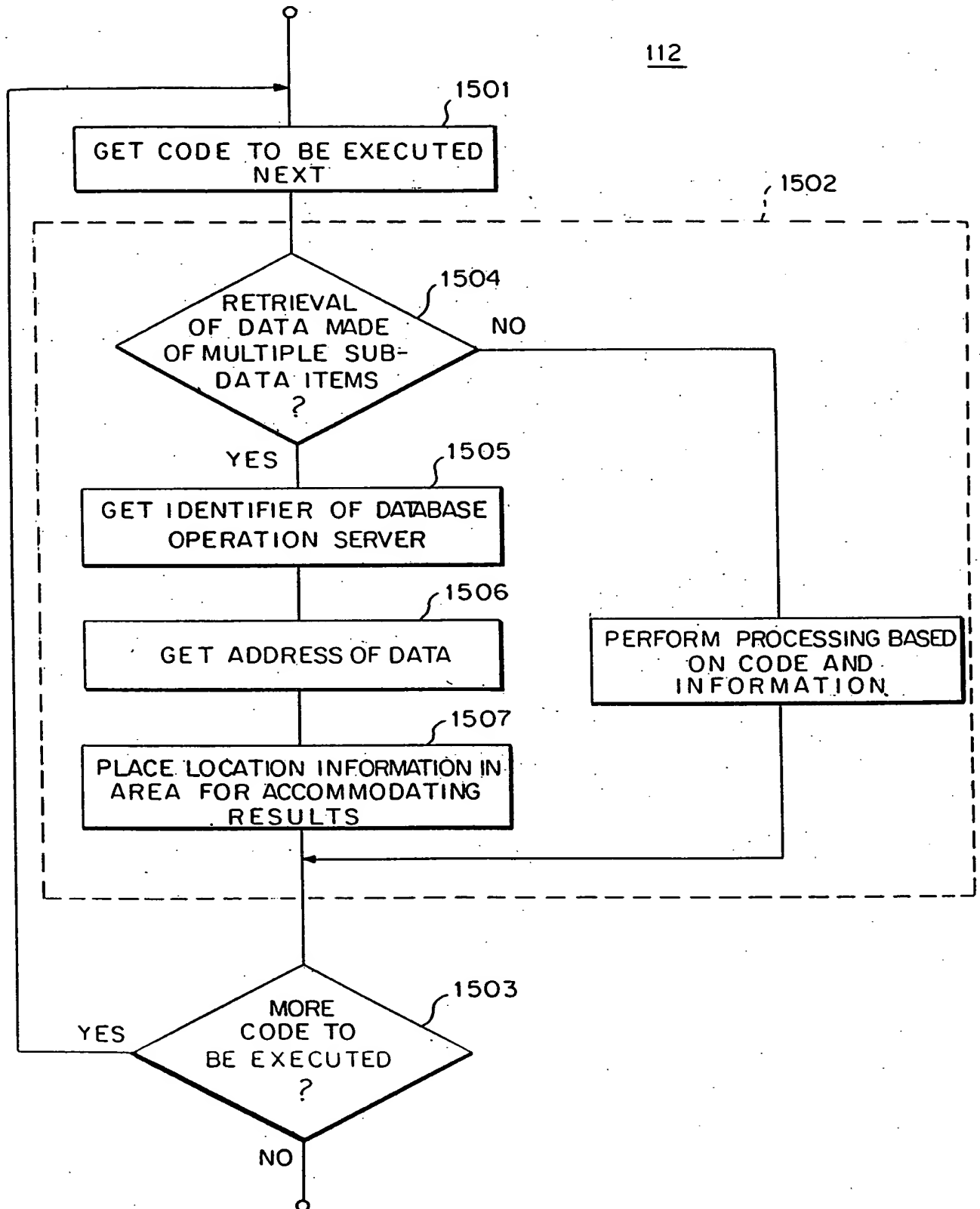


FIG. 16

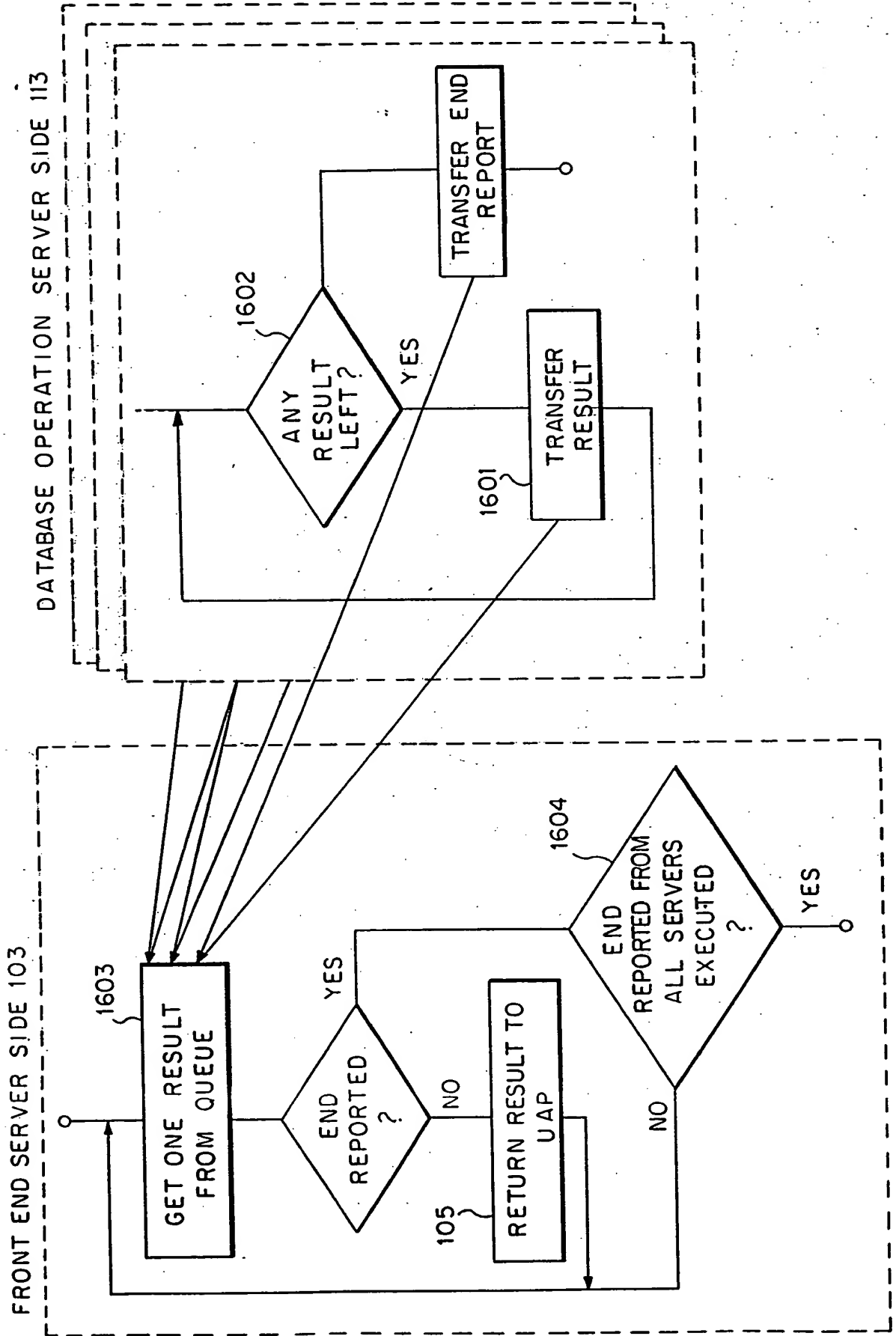


FIG. 17

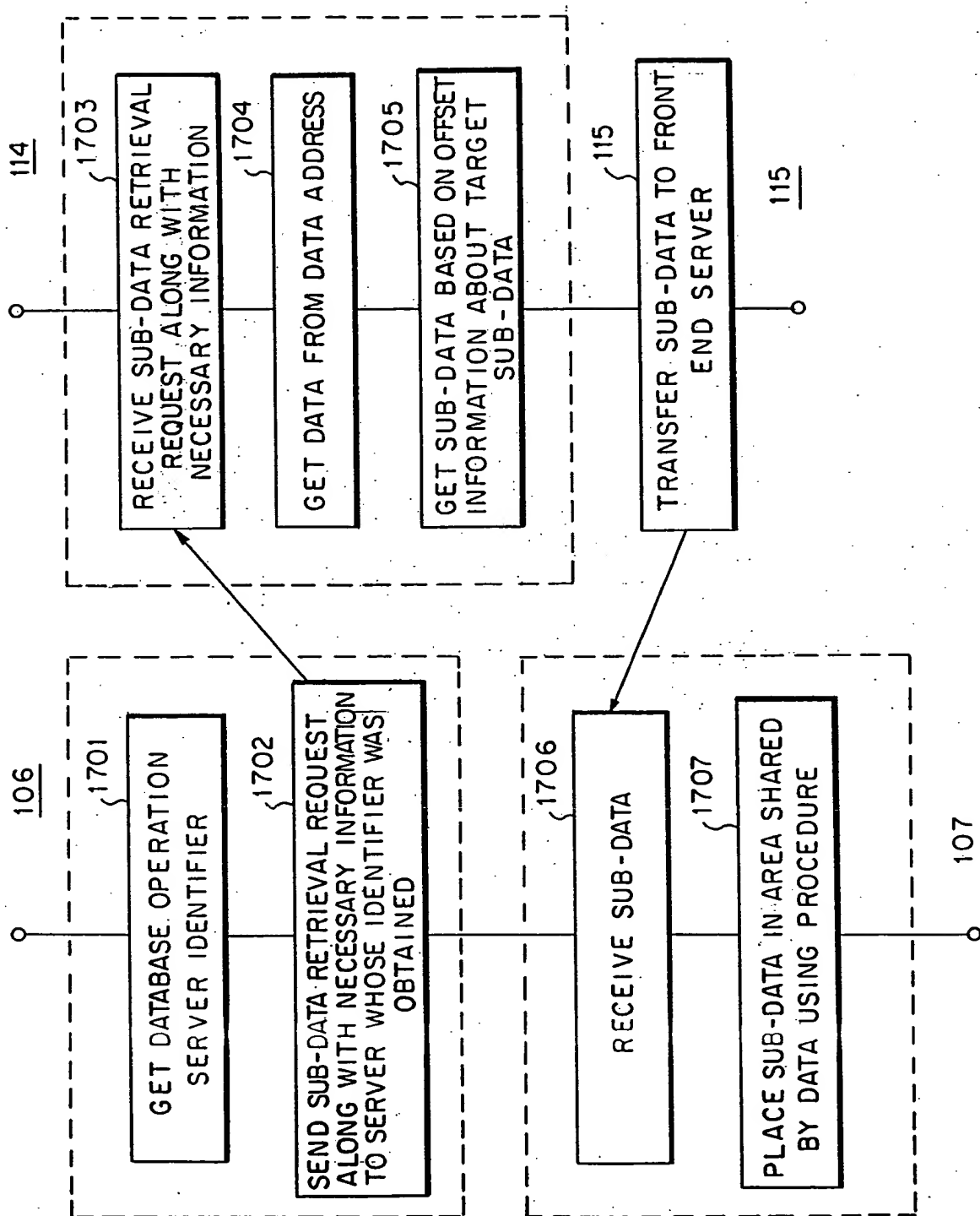


FIG. 18

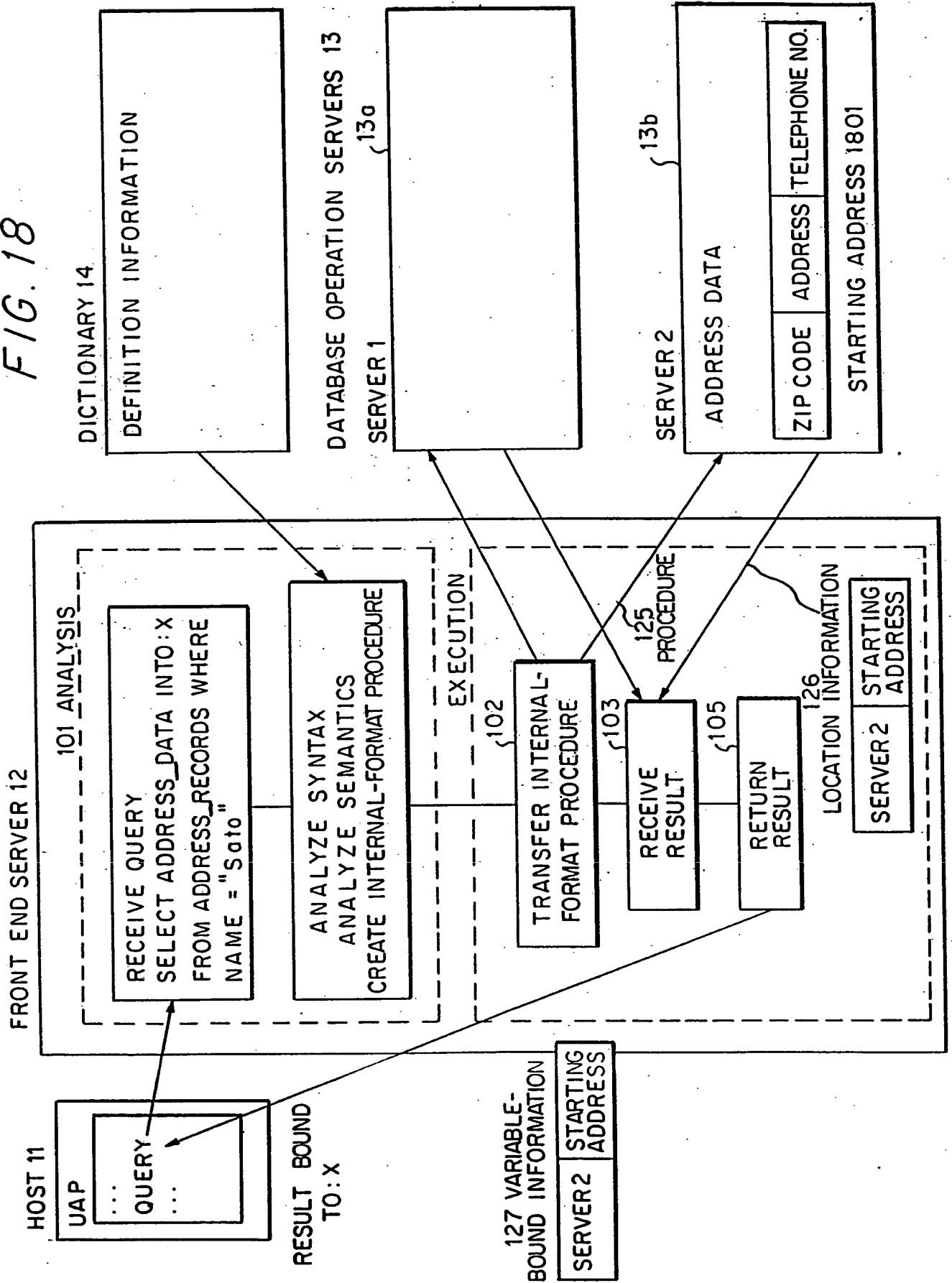


FIG. 19

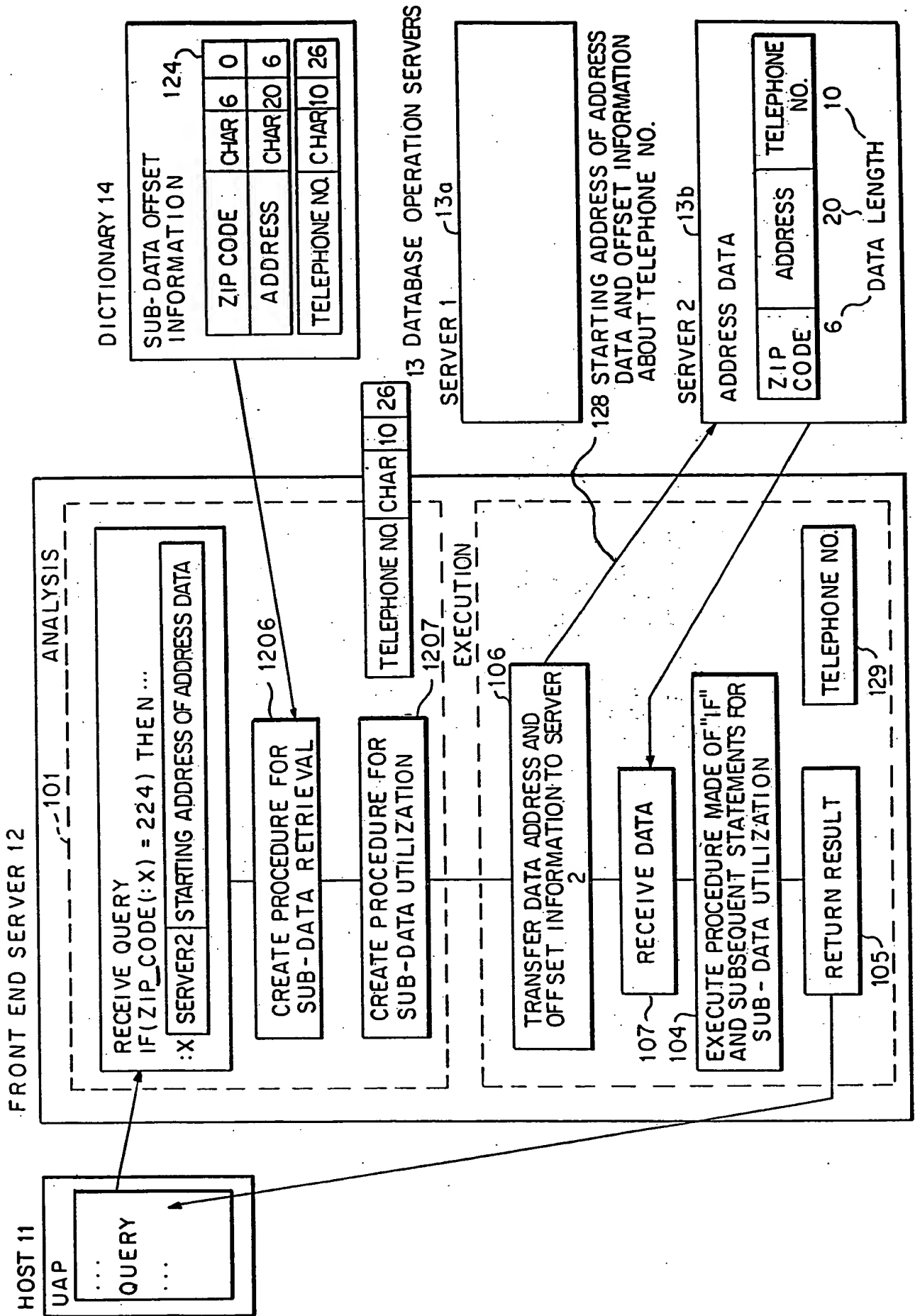


FIG. 20

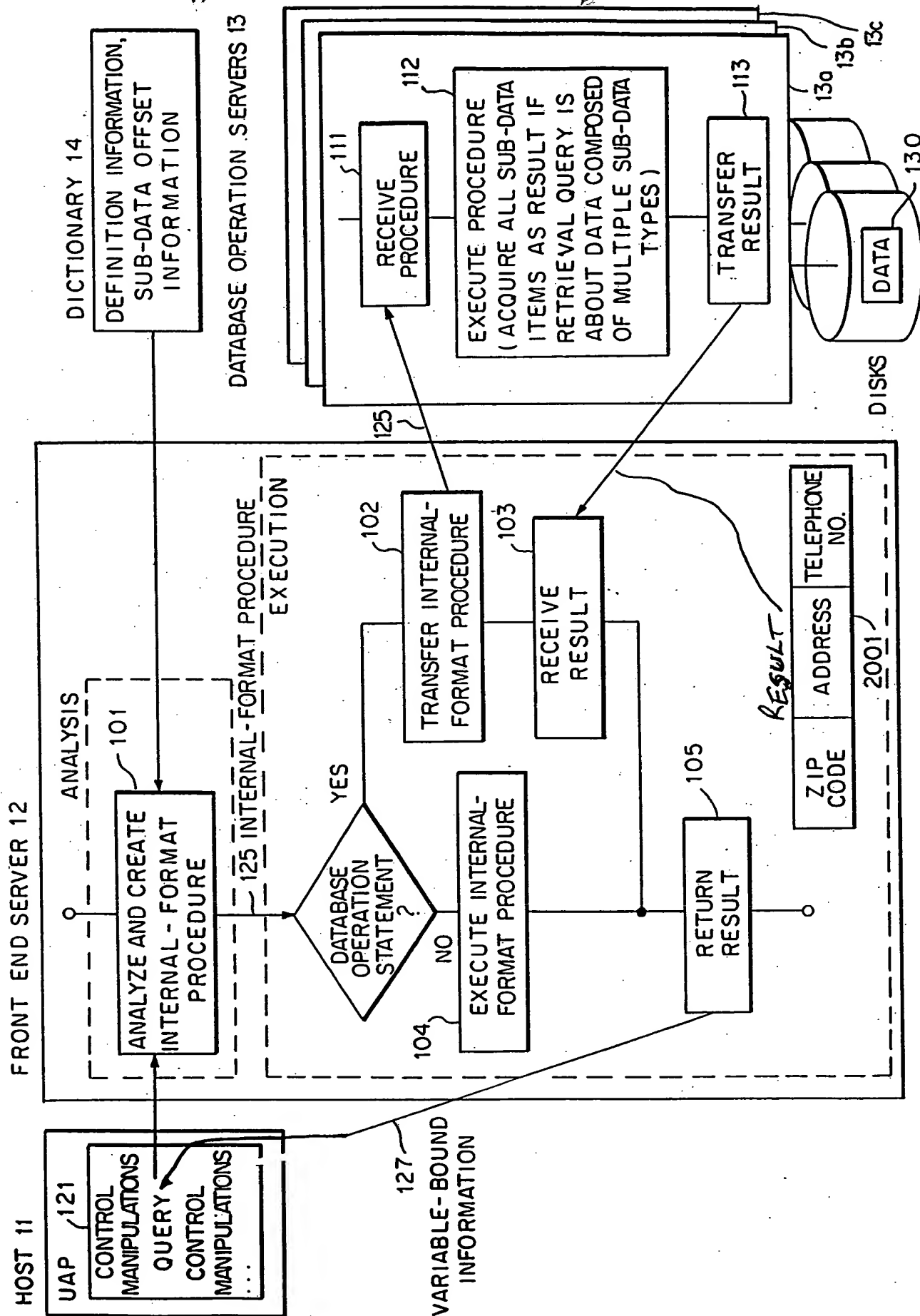




FIG. 21

VARIABLE-BOUND INFORMATION 127

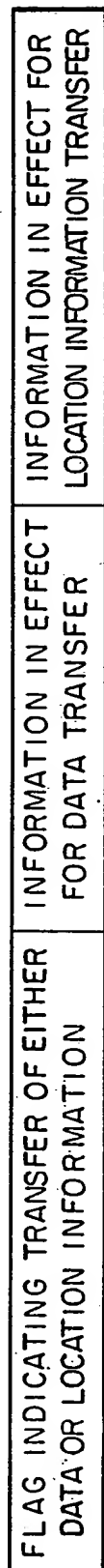


FIG. 23

